

HERRING STORER ACOUSTICS

Suite 34, 11 Preston Street, Como, W.A. 6152

P.O. Box 219, Como, W.A. 6952

Telephone: (08) 9367 6200

Facsimile: (08) 9474 2579

Email: hsa@hsacoustics.com.au



TAYLOR BURRELL BARNETT TOWN PLANNING & DESIGN

**PROPOSED CARWASH
284 LORD STREET, PERTH**

ENVIRONMENTAL ACOUSTIC ASSESSMENT

MARCH 2016

OUR REFERENCE: 20300-1-16068



DOCUMENT CONTROL PAGE

**ENVIRONMENTAL ACOUSTIC ASSESSMENT
CARWASH
LORD STREET, PERTH**

Job No: 16068

Document Reference : 20300-1-16068

FOR

TAYLOR BURRELL BARNETT

DOCUMENT INFORMATION

Author:	Tim Reynolds	Checked By:	Paul Daly
Date of Issue :	15 March 2016		

REVISION HISTORY

Revision	Description	Date	Author	Checked

DOCUMENT DISTRIBUTION

Copy No.	Version No.	Destination	Hard Copy	Electronic Copy
1	1	Taylor Burrell Barnett (Attn: David Reynolds)		✓

This report has been prepared in accordance with the scope of services and on the basis of information and documents provided to Herring Storer Acoustics by the client. To the extent that this report relies on data and measurements taken at or under the times and conditions specified within the report and any findings, conclusions or recommendations only apply to those circumstances and no greater reliance should be assumed. The client acknowledges and agrees that the reports or presentations are provided by Herring Storer Acoustics to assist the client to conduct its own independent assessment.

CONTENTS

1.	INTRODUCTION	1
2.	SUMMARY	1
3.	CRITERIA	1
4.	MODELLING	3
5.	RESULTS	4
6.	ASSESSMENT	4
7.	CONCLUSION	5

APPENDICIES

A	SITE PLAN
---	-----------

1. INTRODUCTION

Herring Storer Acoustics were commissioned by Taylor Burrell Barnett Town Planning & Design to undertake an acoustic assessment of noise emissions associated with the proposed commercial development, being a carwash, located at 284 Lord Street, Perth.

We understand that the proposed development is currently undergoing mediation within the State Administrative Tribunal (SAT) and it has been recommended that an acoustic assessment report be undertaken, with reference to noise emissions from the carwash activities. We also understand that the acoustic assessment should :

- a. To assume all bays will be operational at the same time.
- b. Assemble Receptors are to include both adjoining Commercial premises (north and east), and the multi-storey residential apartments opposite (to the south).

Thus, this report assesses noise emissions from the activities associated with the carwash, assuming that all bay are in operation with regards to achieving compliance with the requirements of the *Environmental Protection (Noise) Regulations 1997*.

For information, plans of the proposed development are attached in Appendix A.

2. SUMMARY

The closest possible neighbouring premises to this development is the apartment building located to the south across Summers Street. The neighbouring premises to the east and north are commercial premises. At the neighbouring residential premises, the influencing factor has been determined to be 8 dB.

The carwash would be open between 0800 to 1800 hours seven days per week. As the carwash would be open before 0900 hours on a Sunday, noise emissions from the car wash needs to comply with the appropriate night period assigned noise level.

Based on the analysis of noise emissions from the proposed site, noise received at the neighbouring premises will comply with the requirements of the *Environmental Protection (Noise) Regulations 1997* at all times.

3. CRITERIA

The allowable noise level at the surrounding locales is prescribed by the Environmental Protection (Noise) Regulations 1997. Regulations 7 & 8 stipulate maximum allowable external noise levels determined by the calculation of an influencing factor, which is then added to the base levels shown below. The influencing factor is calculated for the usage of land within two circles, having radii of 100m and 450m from the premises of concern.

TABLE 3.1 - BASELINE ASSIGNED OUTDOOR NOISE LEVEL

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		L _{A10}	L _{A1}	L _{Amax}
Noise sensitive premises	0700 - 1900 hours Monday to Saturday (Day)	45 + IF	55 + IF	65 + IF
	0900 - 1900 hours Sunday and Public Holidays (Sunday / Public Holiday Day)	40 + IF	50 + IF	65 + IF
	1900 - 2200 hours all days (Evening)	40 + IF	50 + IF	55 + IF
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays (Night)	35 + IF	45 + IF	55 + IF
Commercial premises	All hours	60	75	80

Note: L_{A10} is the noise level exceeded for 10% of the time.
 L_{A1} is the noise level exceeded for 1% of the time.
 L_{Amax} is the maximum noise level.
 IF is the influencing factor.

It is a requirement that received noise be free of annoying characteristics (tonality, modulation and impulsiveness), defined below as per Regulation 9.

“impulsiveness” means a variation in the emission of a noise where the difference between L_{Apeak} and L_{Amax(Slow)} is more than 15 dB when determined for a single representative event;

“modulation” means a variation in the emission of noise that –

- (a) is more than 3 dB L_{Afast} or is more than 3 dB L_{Afast} in any one-third octave band;
- (b) is present for more at least 10% of the representative assessment period; and
- (c) is regular, cyclic and audible;

“tonality” means the presence in the noise emission of tonal characteristics where the difference between –

- (a) the A-weighted sound pressure level in any one-third octave band; and
- (b) the arithmetic average of the A-weighted sound pressure levels in the 2 adjacent one-third octave bands,

is greater than 3 dB when the sound pressure levels are determined as L_{Aeq,T} levels where the time period T is greater than 10% of the representative assessment period, or greater than 8 dB at any time when the sound pressure levels are determined as L_{ASlow} levels.

Where the noise emission is not music, if the above characteristics exist and cannot be practicably removed, then any measured level is adjusted according to Table 3.2 below.

TABLE 3.2 - ADJUSTMENTS TO MEASURED LEVELS

Where tonality is present	Where modulation is present	Where impulsiveness is present
+5 dB(A)	+5 dB(A)	+10 dB(A)

Note: These adjustments are cumulative to a maximum of 15 dB.

The neighbouring residences are located to the south, across Summers Street, from the proposed development. At this premises, the influencing Factor has been determined to be 8 dB. Thus, based on this influencing factor, the assigned outdoor noise levels are listed in Table 3.4. Table 3.4 also lists the assigned noise levels for commercial premises.

TABLE 3.4 - ASSIGNED OUTDOOR NOISE LEVEL

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		L _{A 10}	L _{A 1}	L _{A max}
Noise sensitive premises	0700 - 1900 hours Monday to Saturday	53	63	73
	0900 - 1900 hours Sunday and Public Holidays	48	58	71
	1900 - 2200 hours all days	48	58	63
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays	43	53	63
Commercial	All hours	60	75	80

Note: L_{A10} is the noise level exceeded for 10% of the time.
 L_{A1} is the noise level exceeded for 1% of the time.
 L_{Amax} is the maximum noise level.

4. MODELLING

Modelling of the noise propagation from the proposed development was carried out using an environmental noise modelling computer program, "SoundPlan". Calculations were carried out using the EPA standard weather conditions.

As requested, noise modelling was undertaken with all 5 wash bays in operation, assuming the following activities are taking place :

- 2 cars being vacuumed; and
- 1 car being washed down.

We note the other 2 bays are finishing and detailing. These activities are undertaken by hand and hence noise emissions from these bays are negligible. Although the above activities have been modelled together, given the time per wash, the above activities would not all occur at the same time. Hence, this assessment would be considered as conservative.

The carwash would be open between 0800 to 1800 hours seven days per week. As the carwash would be open before 0900 hours on a Sunday, noise emissions from the car wash needs to comply with the appropriate night period assigned noise level.

We note that this is not a self-serve carwash, but a paid hand wash facility, thus the wash down hoses have lower noise emissions than for standard self-serve units and the usage of the wash down hoses is limited and would occur for less than 10% of the time. Also, the vacuums are remotely ducted and we understand that the vacuum unit will be located within the existing building, which would contain noise emissions. Even so, the suction from the vacuum has still been included in the assessment.

It is noted that the residential premises to the south is a multi-storey residential apartment building. Therefore, calculations were undertaken for noise received at all levels. However, to simplify the assessment, only noise received at the worst case location has been stated.

From measurements undertaken at a similar facility, noise emissions associated with the vacuum units and wash down are listed in Table 4.1.

TABLE 4.1 – SUMMARY OF NOISE EMISSIONS FROM OPERATIONS

Item of Equipment	Sound Power Level, (dB(A))
Vacuum Unit	72
Wash Down	80

We note that given the traffic volumes in the area, noise received at the neighbouring premises is unlikely to be tonal. However, to be conservative, the +5 dB(A) penalty for a tonal component has been included in the assessment.

5. RESULTS

Calculations were undertaken to the neighbouring residential building to the south and the neighbouring commercial premises to the east and north. Table 5.1 summarises the calculated noise level at the above receivers.

TABLE 5.1 – CALCULATED NOISE LEVELS

Location	Calculated Noise Levels (dB(A))
Residence to South	36
Commercial to East	41
Commercial to North	42

6. ASSESSMENT

It is noted that noise received at the neighbouring premises from the car wash activities is likely to occur for more than 10 % of the time. Thus noise received at the neighbouring premises needs to comply with the assigned L_{A10} noise level for the night period.

Table 6.1 lists the characteristics that should be included in the assessable noise level.

TABLE 6.1 – APPLICABLE ADJUSTMENTS AND ASSESSABLE L_{A10} NOISE LEVELS

Location	Calculated Noise Level, dB(A)	Applicable Adjustments to Measured Noise Levels, dB(A)			Assessable Noise Level, dB(A)
		Where Noise Emission is NOT music			
		Tonality	Modulation	Impulsiveness	
Residence to South	36	+5	-	-	41
Commercial to East	41	+5	-	-	46
Commercial to North	42	+5	-	-	47

Table 6.2 summarise the applicable Assigned Noise Levels, and assessable noise level emissions for each identified noise.

TABLE 6.2 –ASSESSMENT OF NOISE LEVEL EMISSIONS

Source	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable Assigned L_{A10} Noise Level (dB)	Exceedance to Assigned Noise
Residence to South	41	Night Period	43	Complies
Commercial to East	46	All hours	60	Complies
Commercial to North	47	All Hours	60	Complies

7. CONCLUSION

The neighbouring noise sensitive premises to this development is the apartment block located to the south, across Summers Street. At these residential premises, the influencing factor has been determined to be 8 dB. Additionally, the noise received at the commercial premises to the north and east, have also been assessed.

The carwash would be open between 0800 to 1800 hours seven days per week. As the carwash would be open before 0900 hours on a Sunday, noise emissions from the car wash needs to comply with the appropriate night period assigned noise level.

This car wash is a “hand” car wash facility and hence, noise emissions are lower than for a “self-serve” type car wash. Notably, the wash down pressure is significantly low, minimising noise emissions from this source and the vacuum unit is located remotely within the existing building, from the vacuum bays

Based on the analysis of noise emissions from the proposed car wash, noise received at the neighbouring premises (both residential and commercial) will comply with the requirements of the *Environmental Protection (Noise) Regulations 1997* at all times.

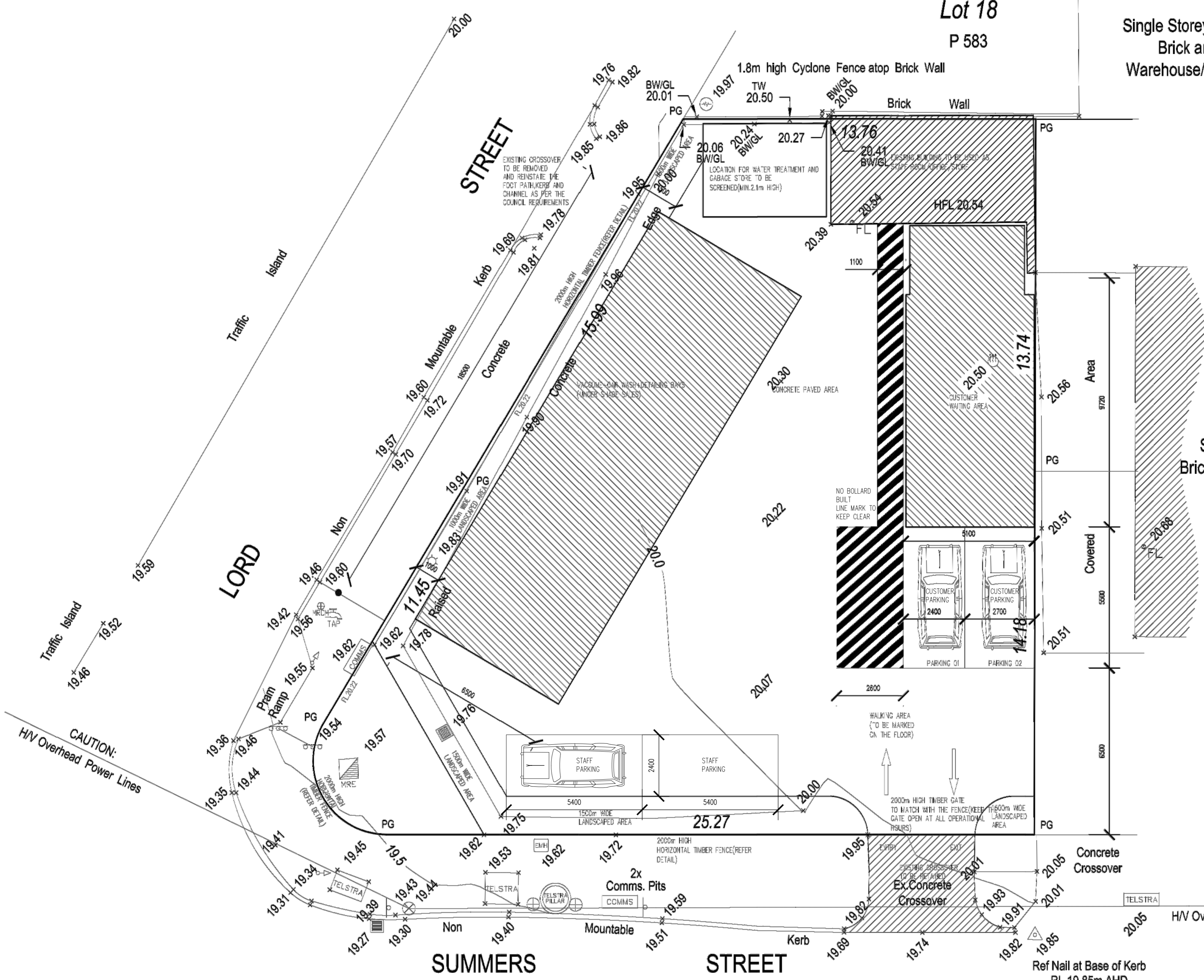
APPENDIX A

SITE PLAN

Lot 18
P 583

Single Storey Rendered
Brick and Tin
Warehouse/Showroom

AREA ANALYSIS	
SITE AREA	-609.14sqm
EXISTING OFFICE BUILDING	-34.00sqm
EXISTING PAVED AREA	-564.86sqm
PROPOSED UNIT BUILDING	- 57.40sqm
PROPOSED SHADED AREA	-120.25sqm



Lot 108
P 30685

Single Storey
Brick and Tin Office
HFL 20.68

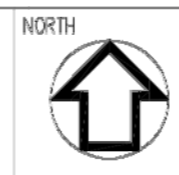
Lot 112
P 30685

NOTES:
EXISTING PAVED CONCRETE TO BE RETAINED WITH IMPROVEMENTS.
EXISTING OFFICE BUILDING TO BE RETAINED.
ALL THE SURFACE WATER/WASTE TO BE COLLECTED AND TREATED BEFORE DISCHARGE TO THE LEGAL POINT OF DISCHARGE.
(TRIPLE INTERCEPTOR TO BE INSTALLED ACCORDING TO HYDRAULIC ENGINEERING DESIGN)

CAUTION:
H/V Overhead Power Lines

DATE	NO	REVISION	DATE	NO	REVISION	DATE

THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE SPECIFICATION AND OTHER CONSULTANTS' DRAWINGS. ALL DIMENSIONS AND LEVELS TO BE VERIFIED ON SITE, WITH ANY DISCREPANCIES BEING RESOLVED PRIOR TO THE COMMENCEMENT OF WORK. THESE DRAWINGS MUST NOT BE SCALED. FIGURED DIMENSIONS ONLY MAY BE TAKEN FROM THIS DRAWING AND THE BUILDING CODE OF AUSTRALIA.



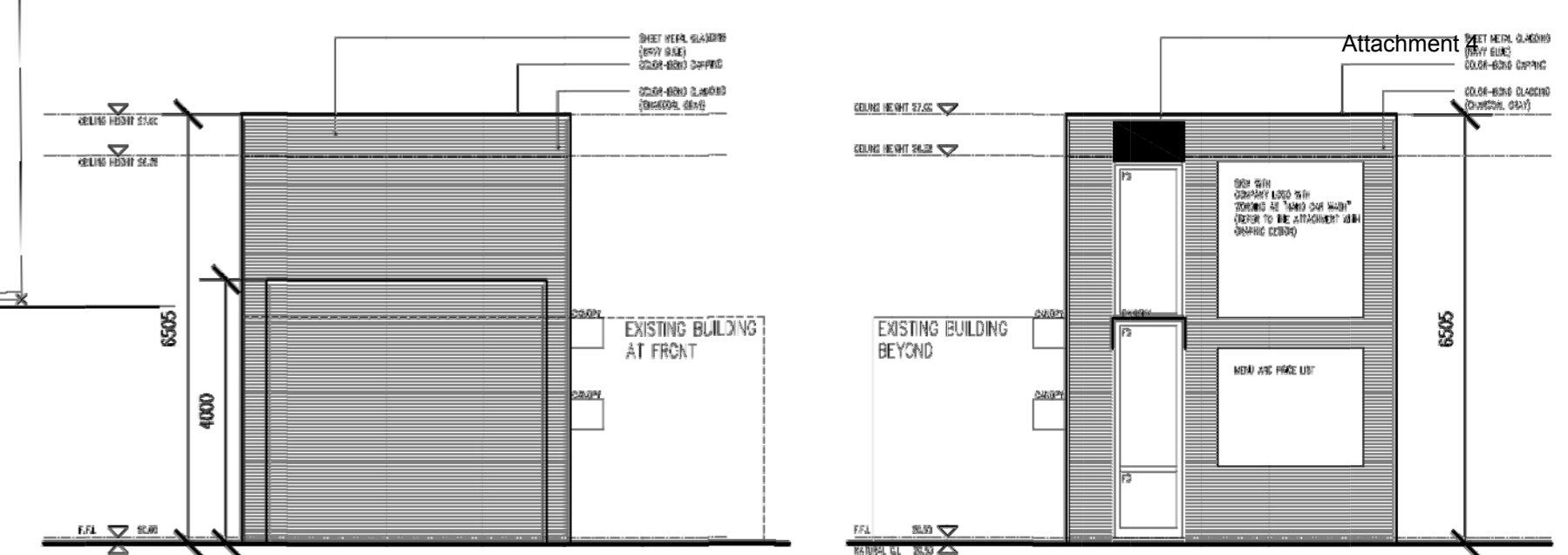
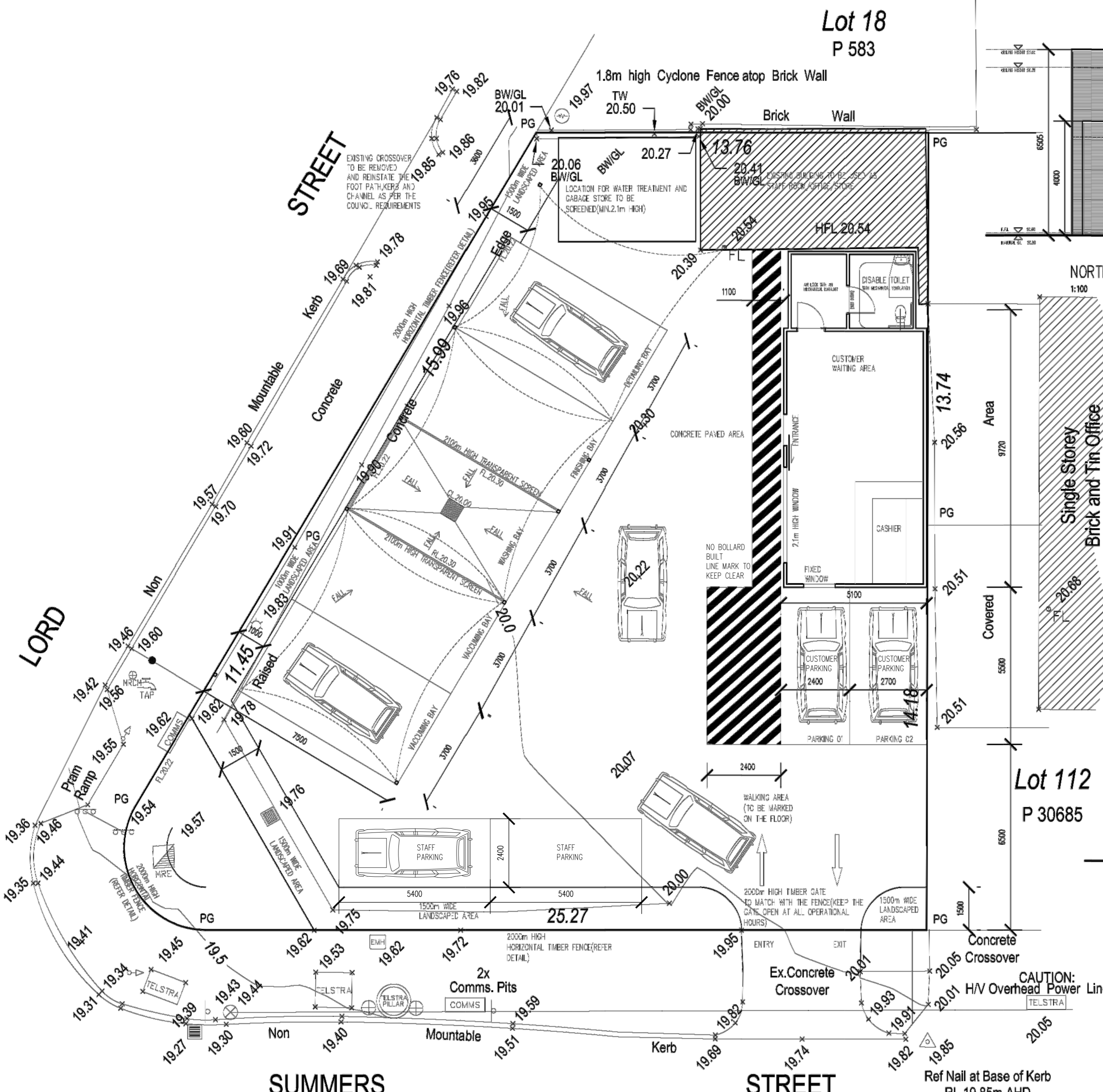
DRAWINGS
SITE PLAN
1:100 @ A2

CLIENT
THE WASH GARAGE PTY LTD
ADDRESS
284 LORD STREET
PERTH - WESTERN AUSTRALIA

DRAWN
DWA
PLOT
09.06.2015
DWG No.
TP01
REVISION
A

P.J.D.I INTERNATIONAL PTY LTD
P.O. BOX 5230
CLAYTON VIC 3188
TEL 0433909 582

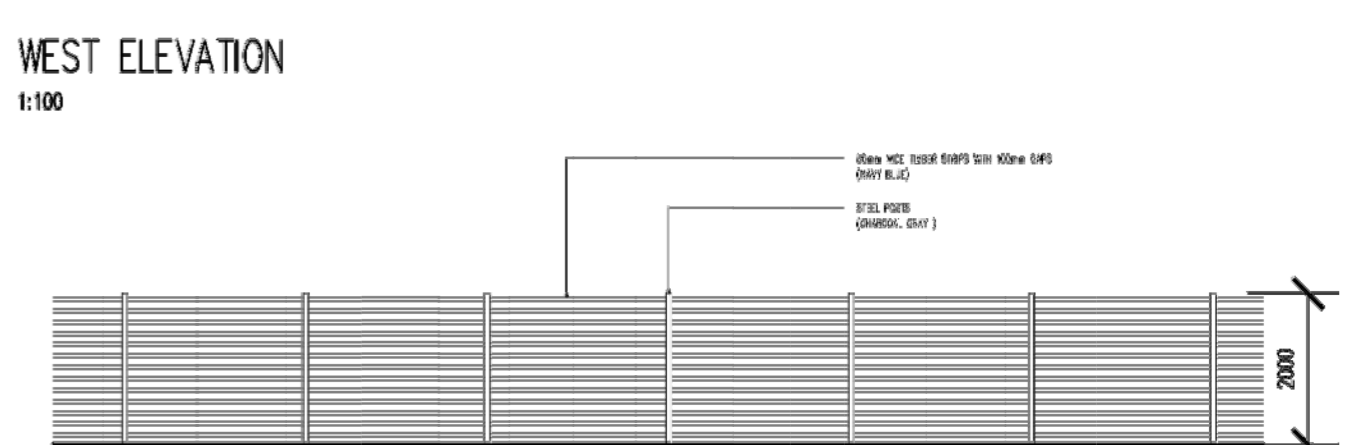
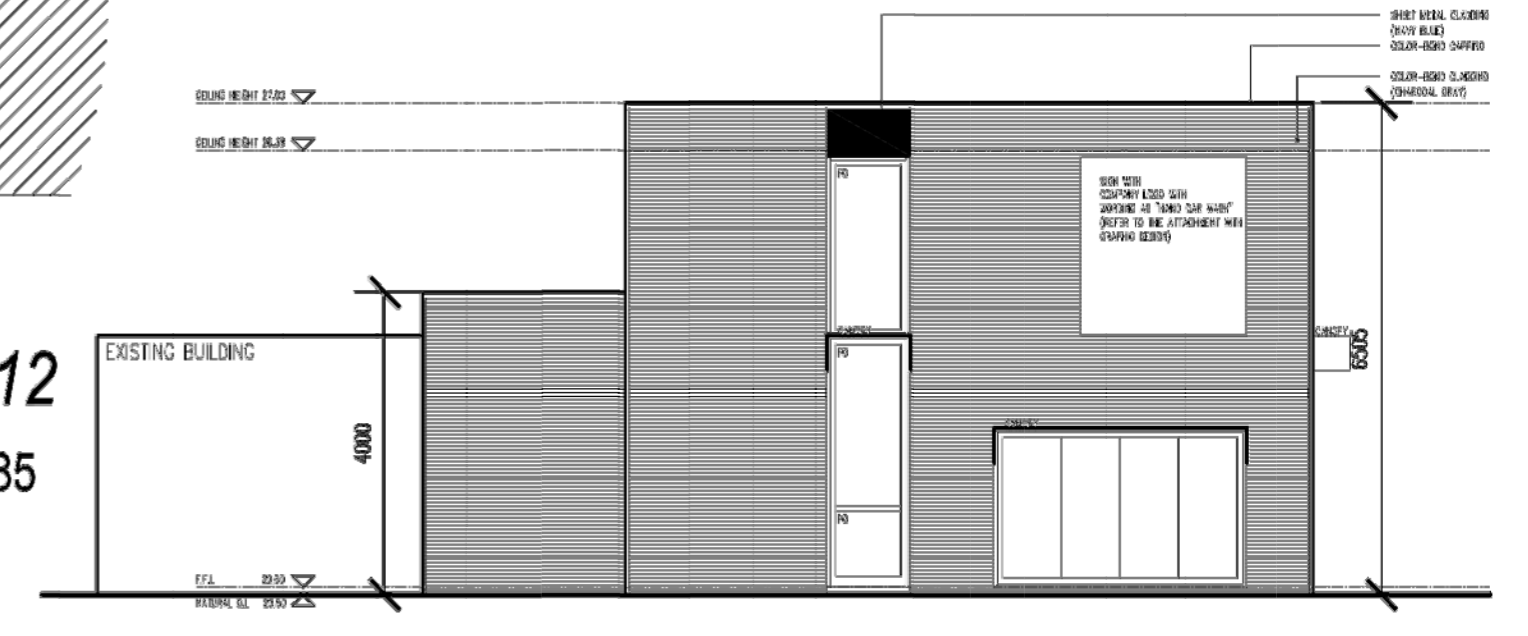
Lot 18
P 583



Lot 108
P 30685



Lot 112
P 30685



SUMMERS

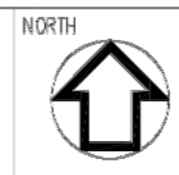
STREET

Ref Nail at Base of Kerb
RL 19.85m AHD

TYPICAL DETAIL FOR FENCE AND GATE
1:100

DATE	NO	REVISION	DATE	NO	REVISION	DATE

THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE SPECIFICATION AND OTHER CONSULTANTS' DRAWINGS. ALL DIMENSIONS AND LEVELS TO BE VERIFIED ON SITE, WITH ANY DISCREPANCIES BEING RESOLVED PRIOR TO THE COMMENCEMENT OF WORK. THESE DRAWINGS MUST NOT BE SCALED. FIGURED DIMENSIONS ONLY MAY BE TAKEN FROM THIS DRAWING AND THE BUILDING CODE OF AUSTRALIA.



DRAWINGS
SITE PLAN + ELEVATIONS
1:100 @ A2

CLIENT
THE WASH GARAGE PTY LTD
ADDRESS
284 LORD STREET
PERTH - WESTERN AUSTRALIA

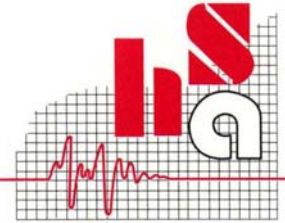
DRAWN
DHL
PLOT
09.06.2015
DWG No.
TP02
REVISION
A

P.J.D.I INTERNATIONAL PTY LTD
P.O. BOX 5230
CLAYTON VIC 3188
TEL 0433909 582

HERRING STORER ACOUSTICS

Suite 34, 11 Preston Street, Como, W.A. 6152
P.O. Box 219, Como, W.A. 6952
Telephone: (08) 9367 6200
Facsimile: (08) 9474 2579
Email: hsa@hsacoustics.com.au

Attachment 4



Our ref: 20399-1-16068

12 April 2016

Taylor Burrell Barnett
Town Planning and Design
187 Roberts Road
Subiaco WA 6008

Attention : David Reynolds
Email : David@tbbplanning.com.au

Dear David,

THE WASH GARAGE – 284 LORD STREET, PERTH ADDITIONAL INFORMATION - ACOUSTICS

As requested, we have reviewed the additional information requested by council and herewith provide the following response.

INFORMATION REQUESTED

From your email of 12 April 2016, council requested further information regarding noise emission from site. Based on this email, we understand that Items 3 and 5 were regarding acoustics. These items were :

3. It is noted in the noise assessment that it is stated that the existing building is brick and iron. The entire southern elevation of this building is glass. This was not detailed in the noise assessment. Please modify the noise assessment to clarify whether the noise assessment has undertaken its modelling based upon a glass elevation rather than brick. Clarification in the noise assessment as to what would meet the requirements for the washing in that the report states that the “wash down pressure is significantly low.” Does this mean no fittings to the hose? Please have clarified in the report what is required for the wash down pressure to be considered low in accordance with the noise assessment. We request that the operational management plan include a commitment to the wash down pressure as detailed in the revised noise assessment.
5. Clarification as to the use of the existing building given that the building will now accommodate the water treatment and vacuum machinery. Clarification of the location of staff room, given the concern that the noise of the water treatment and vacuum machinery will make this building unusable as a staff room or office.



We understand that these require further information / clarification relating to :

- Noise breakout from the water treatment and vacuum machinery, with regards to the southern glass façade of the existing building; and to the staff area contained within the same building; and
- Clarification of the wash down hoses.

RESPONSE

Treatment Equipment Breakout Noise

We understand that the water treatment and vacuum machinery will be enclosed within a plantroom. To reduce noise levels within the staff room, it is recommended that the construction of the plantroom be a single leaf common brick or concrete blocks. The access door should be a fire or smoke door in a recessed frame with Raven RP38 and RP24 door seals.

With the above construction, noise within the staff area and noise received at the neighbouring premises from the water treatment and vacuum machinery would be acceptable and comply with the requirements of the *Environmental Protection (Noise) Regulations 1997*.

Wash Down Pressure

The description used in the report, being “wash down pressure is significantly low” was referring to the pressure at which the water impacts on the vehicle.

With regards to the hoses, noise emissions from this activity is dominated by the noise generated by the water impacting on the car panels. With a “hand” type car wash they wish to minimise spray on to the neighbouring car that is being buffered or polished. Additionally, they are only washing the detergent off the car and not trying to actually blast grime off the vehicle with the high pressure hose. Thus, we understand that they use a wider angled or fan spray nozzle, hence the velocity of the water as it impact on the vehicle is less, which in turn significantly reduces the noise emissions from this part of the cleaning process.

We trusts the above clarifies the quires raised by council.

Yours faithfully,
For **HERRING STORER ACOUSTICS**

Tim Reynolds